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Recommended Citation

University of Dayton, "Dayton Science Project Brings Changes to the Classroom: Curriculum Updated, Teachers Trained, Kids Benefit" (1992). *News Releases*. 10550.
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The University of Dayton

News Release

Nov. 12, 1992

Contact: Rosemary Harty

DAYTON SCIENCE PROJECT BRINGS CHANGES TO THE CLASSROOM: CURRICULUM UPDATED, TEACHERS TRAINED, KIDS BENEFIT

DAYTON, Ohio -- Science isn't quiet in Mary Moorman's sixth-grade class at Lincoln Elementary school, and it's never dull. A unit on minerals means touching, tasting and trying to scratch glass with chunks of minerals in order to identify them. Working in small groups, the students engage in lively arguments: Which is feldspar? Which is quartz?

"Hands-on science" has come to the Dayton school district, with a newly structured curriculum. Self-discovery has replaced lecturing. Carefully assembled materials -- such as a packet of minerals for an earth science lesson -- enhance textbook reading. And teachers who showed in a system-wide poll in 1989 that they didn't feel confident teaching science have received the training they need to teach science for the 21st century.

"Our students need a solid scientific background to succeed today," said Thomas Matczynski, professor of education at the University of Dayton and director of the science project. "If they don't have it, they are at a disadvantage -- just as our nation is at a disadvantage globally."

The improvements in Dayton schools are the result of an ongoing partnership linking schools, the University and the local scientific community in a ground-up, K-12 overhaul of

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the system's science curriculum. The changes were prompted by an awareness that Dayton students, like most in the nation, weren't getting the best science education. Achievement test results in the last two years have found U.S. students woefully behind those of other nations in science literacy and competence; the U.S. Department of Education found in 1991 that only seven percent of high school seniors were prepared for college-level science courses.

The rewritten curriculum in the Dayton district begins in kindergarten, where students learn about "My Body," "My Environment" and "Beginning Senses." The new units, four major ones each year in the area of life sciences, earth sciences, chemistry and physical science, feature imaginative approaches, such as "How the Earth Gets a Facelift." Designed by teachers, with help from the scientific community partners, these units are getting their first tests in the classroom this month and will be fine-tuned by groups of teachers.

These activity-based science classes at the elementary grades capitalize on children's natural curiosity to learn about the world, Matczynski said. A big reward for sixth-graders is a visit to the district's Challenger Center, a mock-up of a space shuttle and NASA command center that provides a simulated trip into space: the ultimate in hands-on experience.

"What we're doing is building a foundation, focusing on scientific concepts, scientific process skills and critical thinking," he said. "When students get to high school, they're ready and eager for higher-level science and problem-solving."

A weak curriculum for high school students has been greatly enhanced, with new courses being developed in advanced physics, chemistry and anatomy. "Advanced placement courses were non-existent in most high schools," Matczynski said. "Now they're in each one." When talented students advance beyond the district's current capabilities, they can take courses designed for them at UD.

Each of the district's science laboratories has been evaluated with the help of a team of science professors and professionals. Dangerous and outdated chemicals were removed. New gas and electrical lines were installed. Changes have been recommended to make the laboratories better reflect industry needs today, and with the passage of a 10.4-mill levy last week, the district has earmarked funds for physical improvements to the laboratories.

In addition to making suggestions for curriculum changes, 30 industry and government

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partners in the science project have made themselves accessible to science teachers through a computer network established with the help of IBM Corp., which donated hardware and software to the project. "A teacher can send a message to an engineer in his laboratory, seeking a definition, or a problem that would help them apply a science concept in the classroom to the world of work," Matczynski said.

Organizers of the Dayton Science Project, which was funded in part by a National Science Foundation grant, hope the project becomes a model for cooperation between public schools, higher education and industry. The project demonstrates how far a district can go with a commitment to science education.

"In a few years, when Ohio begins testing ninth-graders for science proficiency, we'll have a good gauge of how much we've accomplished," Matczynski said. "Until then, just seeing the renewed commitment from teachers and the excitement in the kids tells us we're succeeding."

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For more information, contact **Thomas Matczynski** at (513) 229-3734. To arrange interviews with **James Williams**, Dayton's superintendent of schools, or Dayton teachers, please call **Jill Moberley** at (513) 461-3052. NOTE TO EDITORS: B/W photos and color slides are available of students in the Challenger Center, teacher science training and a hands-on science class.